

A 291-day Evaluation of the Performance of a Consumer-grade Temporal Radon Detector

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Health Physics [128\(1\):p 60-65, January 2025.](#) | DOI: 10.1097/HP.0000000000001858

Abstract

Affordable, accurate, and robust temporal measurement devices are desirable for screening and assessment of radon levels in private homes and workplaces. This research expands upon prior research, using the RadonFTlab RadonEye device through a comparison of multiple samples of this instrument with a laboratory-grade instrument, the Saphymo AlphaGUARD, over a more extensive period than reported previously. Data were collected over 291 d in a poorly ventilated basement space in an occupied building. Environmental conditions varied naturally, changing both the radon source term and radon entry into the space approximating typically deployed conditions. The R-squared linear regression correlation coefficient and relative sensitivities of each RadonEye with the AlphaGUARD were computed. Overall temporal and diurnal variations were also studied. The sensitivities of all RadonEyes and the AlphaGUARD agreed to within 22% throughout the entire deployment period.